

30. (New) Compositions intended for use in Food industries, containing soluble branched polymers of glucose according to Claim 25 or capable of being obtained according to Claim 19.

#### REMARKS

##### Claim Objections

Claims 10-18 have been canceled without prejudice and substituted by new claims 19-30.

The independent claim of the new set of claims is the process claim 19 (former claim 14).

Claims 25 to 28 are formerly claims 10 to 13.

Claims 19 and 20 are formerly derived from claim 14.

Claim 21 and 24 are respectively and formerly derived from claims 15 and 17.

Claims 22 and 23 are formerly derived from claim 16.

Claims 29 and 30 are formerly derived from claim 18.

##### Claims rejections under 35 USC 112

Claims 10 - 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

This rejection is respectfully traversed.

Former claim 14 has been divided into two claims 19 and 20 to cancel the use of "preferably".

Former claim 16 has been divided into two claims 22 and 23 to cancel the use of "preferably".

Former claim 18 has been divided into two claims 29 and 30 to cancel the use of "especially" and "in particular".

In all the claims, the terme "soluble" has been added before "branched polymers of glucose" when it was missing, so that to homogeneize the terms. The basis is in all the specification, and the title.

It is hence respectfully submitted that the invention as claimed now fulfils the requirements of 35 USC§112 §2.

Claims rejections under 35 USC 102 Novelty

Former claims 10-18 have been rejected in the Office Action under 35USC§102(b) as anticipated by OKADA ET AL. (4,454,161). By the present amendment, claims 10 - 18 have been withdrawn from examination without prejudice and have been replaced by claims 19 to 30. Claims 19-30 are pending.

This rejection is respectfully traversed in view of the following arguments and the enclosed extract from the textbook Starch Conversion Technology, edited by Van Beynum et al., 1985.

The only method to get the reaction product in OKADA ET AL. which *could* be considered as anticipating the present invention is from lines 16 to 20 in column 2, the short description of a gelatinization followed by the enzymatic reaction "Alternatively, ... as desired". The other method, which consists in carrying out

gelatinization and simultaneously the enzymatic reaction, belongs for sure to the technological background of the invention.

The gelatinization conditions as usually used in the prior art are « mild » conditions:

- the temperature is below 92°C, and in particular below 90°C for the waxy maize starch,
- the pressure is atmospheric, and
- the temperature is slowly raised so that to reach progressively the gelatinization temperature of such a starch.

All that is explained in the enclosed Van Beynum et al. document (slow rise: at the top of page 32 and at the top of page 33, and temperature range: last line of the first paragraph of page 33).

It is surely the way that the process of OKADA ET AL. is carried out (as no condition is disclosed for D1, it is logical to think that the one skilled in the art uses standard conditions for the gelatinization of the waxy maize starch, that is to say that the temperature is below 100°C).

On the contrary: the "gelatinization" conditions according to the process of the invention are drastic (one could even say that it is not a true gelatinization, according to the technical meaning of the term). That is to say the starch is not "gelatinized" according to the classical meaning of the term, because it is treated:

- at a high temperature : more than 130°C, preferably lying between 140 and 150°C
- under a high pressure : more than 3.5 bars, preferably lying between 4 and 5 bars, and
- for a short time (flash effect) : during at least 2 min, preferably for 2 to 5 mins.

The starch, for example the waxy maize starch which is treated according to the process of the invention, is not slowly and progressively treated but it undergoes a very short thermal shock, under pressure.

Then the substrate which will be contacted with the branching enzyme, even if it is the same branching enzyme that in OKADA ET AL., will not be the same! The branching enzyme will not face the same amylopectin chains which constitute for example the waxy maize starch!

The preparation process according to the invention, carried out before the treatment by the branching enzyme, is thus different from the one described in the prior art and is thus new. That is to say that the process for manufacture of branched polymers of glucose according to the invention is new.

Hence the invention as claimed is new versus the document OKADA et al.

It is hence respectfully submitted that the objection under 35USC§102(b) be withdrawn.

Claims rejections under 35 USC 103 Inventive step

Former claims 10-18 have been rejected in the Office Action under 35USC§103(a) as anticipated by OKADA et al. (4,454,161). By the present amendment, claims 10 - 18 have been withdrawn from examination without prejudice and have been replaced by claims 19 to 30. Claims 19-30 are pending.

This rejection is respectfully traversed in view of the following arguments and Declaration.

The process according to the invention is the combination of the treatment of a starch, which has been previously modified at a high temperature, under pressure, for a short period of time. It leads to the obtaining of specific branched polymers of glucose containing essentially no  $\beta$ -glucosidic bonds.

OKADA ET AL. teaches the same branching enzyme, but does not teach the same substrate (in the same molecular state) to be treated by the said same branching enzyme.

It may be not obvious to one of ordinary skill in the art at the time the invention was made to use the drastic conditions claimed by the present invention for the preparation of a starch to be treated by branching enzyme for the purpose of preventing retrogradation of amylaceous substances, because OKADA ET AL. teaches branched glucose polymers obtained by a standard method of producing the polymer.

The unexpected result is to succeed in preventing retrogradation of the amylaceous product with such a drastic pretreatment of starch before using branching enzyme.

Hence the invention as claimed is inventive versus the document OKADA ET AL.

It is hence respectfully submitted that the objection under 35USC§102(b) be withdrawn.

As a conclusion, it is hence respectfully submitted that the Application is now in proper form for allowance.

11

Respectfully submitted,

Jean-Jacques CABOCHE et al

July 14, 2004  
Date

By:

Michael O. Sturm  
Michael O. Sturm

Reg. No. 26,078

STURM & FIX LLP  
206 Sixth Avenue, Suite 1213  
Des Moines, Iowa 50309-4076  
Phone: 515-288-9589  
Fax: 515-288-4860